
Programmer's Quick Reference Guide

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For Safety information, Warranties, and Regulatory
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HP 54520C and 54540C Series Oscilloscopes

Introduction

The Quick Reference Guide lists the commands and queries with their corresponding arguments and returned formats. The arguments for each command list the minimum argument required. The part of the command or query listed in uppercase letters refers to the short form of that command or query. The long form is the combination of uppercase and lowercase letters.

Conventions

The following conventions are used in this guide:

- <> Angular brackets enclose words or characters that symbolize a program code parameter or an HP-IB command.
- ::= "is defined as." For example, <A> ::= indicates that <A> can be replaced by in any statement containing <A>.
- | "or." Indicates a choice of one element from a list. For example, <A> | indicates <A> or but not both.
- ... An ellipsis (trailing dots) indicate that the preceding element may be repeated one or more times.
- [] Square brackets indicate that the enclosed items are optional.
- { } When several items are enclosed by braces, one, and only one of these elements may be selected.

Suffix Multipliers

The suffix multipliers available for arguments are:

EX ::= 1E18	M ::= 1E-3
PE ::= 1E15	U ::= 1E-6
T ::= 1E12	N ::= 1E-9
G ::= 1E9	P ::= 1E-12
MA ::= 1E6	F ::= 1E-15
K ::= 1E3	A ::= 1E-18

For more information on specific commands or queries, refer to the *HP 54520C and 54540C Series Oscilloscopes Programmer's Reference*.

<hr/>	
	*CLS
Command	*CLS
<hr/>	
	*DMC
Command	*DMC <ascii_string>,<block_data>
Where:	<ascii_string> ::= a quoted ascii string <block_data> ::= definite block data in IEEE 488.2 # format
<hr/>	
	*EMC
Command	*EMC {{OFF 0} {ON 1}}
Query	*EMC?
Returned Format	{0 1}<NL>
<hr/>	
	*ESE
Command	*ESE <mask_argument>
Query	*ESE?
Returned Format	<mask_argument><NL>
Where:	<mask_argument> ::= integer, 0 to 255
<hr/>	
	*ESR?
Query	*ESR?
Returned Format	<status><NL>
Where:	<status> ::= integer, 0 to 255
<hr/>	
	*GMC?
Query	*GMC? <ascii_string>
Returned Format	<block_data><NL>
Where:	<ascii_string> ::= a quoted string <block_data> ::= definite block data in # format
<hr/>	

Programmer's Quick Reference Guide

*IDN?

Query
Returned Format
Where:

*IDN?
HEWLETT-PACKARD,545XXC,YYYYYYYYYY,ZZ.ZZ,ZZ.ZZ,ZZ.ZZ,Z.ZZZ,<NL>
<XXC> ::= model number is 20C (HP 54520C), 22C (HP 54522C),
40C (HP 54540C), or 42C (HP 54542C)
<YYYYYYYYYY> ::= the serial number of the instrument
<ZZ.ZZ> ::= the software revision of the software modules
(Boot ROM, Flash ROM version of Boot ROM, System, Keyboard
ROM). 00.00 = not installed
<Z.ZZZ> ::= the telecommunication mask option
null = no option, 0.001 = option installed

*LMC

Query
Returned Format
Where:

*LMC?
<ascii_string><NL>
<ascii_string> ::= string list separated by commas

*LRN?

Query
Returned Format
Where:

*LRN?
:SYSTEM:SETup <setup><NL>
<setup> ::= #800002048<learn_string>
<learn_string> ::= 2048 bytes in length

*OPC

Command
Query
Returned Format

*OPC
*OPC?
1<NL>

*OPT ?

Query
Returned Format
Where:

*OPT?
0<NL> or 000.1<NL>
0 = no option
0.001 = telecom mask option installed

<hr/>	
*PMC	
Command	*PMC
<hr/>	
*RCL	
Command	*RCL {0 1 2 3 4 5 6 7 8 9}
<hr/>	
*RST	
Command	*RST
<hr/>	
*SAV	
Command	*SAV {1 2 3 4 5 6 7 8 9}
<hr/>	
*SRE	
Command	*SRE <mask_argument>
Query	*SRE?
Returned Format	<mask><NL>
Where:	<mask_argument> ::= integer, 0 to 255 <mask> ::= sum of all bits that are set - integer, 0 through 255
<hr/>	
*STB?	
Query	*STB?
Returned Format	<value><NL>
Where:	<value> ::= integer, 0 through 255
<hr/>	
*TRG?	
Command	*TRG
<hr/>	

*TST?

Query	*TST?
Returned Format	<result><NL>
Where:	<result> ::= 0 or non-zero value. 0 indicates the test passed. non-zero indicates the test failed

*WAI

Command	*WAI
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:ACquire:COMplete

Command	:ACquire:COMplete <complete_argument>
Query	:ACquire:COMplete?
Returned Format	[:ACquire:COMplete] <complete_argument><NL>
Where:	<complete_argument> ::= integer, 0 to 100 percent

:ACquire:COUNt

Query	:ACquire:COUNt <count_argument>
Returned Format	:ACquire:COUNt?
Where:	[:ACquire:COUNt] <count_argument><NL>
	<count_argument> ::= integer, 1 to 2048 (depending on the acquisition type)

:ACquire:POINts

Command	:ACquire:POINts <points_argument>
Query	:ACquire:POINts?
Returned Format	[:ACquire:POINts] <points_argument><NL>
Where:	<points_argument> ::= integer, 500 in repetitive mode, 512, 1024, 2048, 4196, 8192, 16384, or 32768 in the real-time mode (sequential mode off), or 4 through 32768 in the real-time mode (sequential mode on)

	:ACQuire:TYPE
Command	:ACQuire:TYPE {NORMal AVERage ENVELOpe PDETECT RAWData[,<length>][,<acquisitions>]][,{NORMal AVERage ENVELOpe }]
Query	:ACQuire:TYPE?
Returned Format	[[:ACQuire:TYPE] {NORMal AVERage ENVELOpe PDETECT RAWData,<length>,<acquisitions><NL> <length> ::= integer, 4 to 32768 <acquisitions> ::= dependent on length of acquisitions and buffer size

	:AUToscale
Command	:AUToscale
Query	:AUToscale?
Returned Format	[[:AUToscale] {0 1}<NL>

	:BEEPer
Command	:BEEPer [{(OFF 0) (ON 1)}]
Query	:BEEPer?
Returned Format	[[:BEEPer] {0 1}<NL>

	:BLANK
Command	:BLANK <display>
Where:	<display> ::= {CHANnel<n> FUNCTION{1 2 3 4} WMEMory{1 2 3 4} PMEMory{1 2}} <n> ::= integer, 1 or 2 (HP 54520C/54522C) or 1 through 4 (HP 54540C/54542C)

	:BNC
Command	:BNC {PROBe TRIGger}
Query	:BNC?
Returned Format	[[:BNC] {PROBe TRIGger}<NL>

:CALibrate:DATA:ASCii?

Query :CALibrate:DATA:ASCii?
 Returned Format [:CALibrate:DATA:ASCii] <data>,<data>,...<NL>
 Where: <data> ::= calibration data

:CALibrate:SETup?

Query :CALibrate:SETup?
 Returned Format :CALibrate:TNULl
 Where: <null_value_n>,<null_value_n>,<null_value_n><NL>
 <null_value_n> ::= exponential, channel 1 to channel<n> skew,
 where n = 2 (HP 54520C/54522C) or 2 through 4
 (HP 54540C/54542C) in format

:CALibrate:TNULl

Command :CALibrate:TNULl <null_value_n>
 Query :CALibrate:TNULl?
 Returned Format [:CALibrate:TNULl] <null_value_n><NL>
 Where: <null_value_n> ::= exponential, channel 1 to channel<n> skew,
 where n = 2 (HP 54520C/54522C) or 2 through 4
 (HP 54540C/54542C)

:CHANnel<n>:COUPling

Command :CHANnel<n>:COUPling {AC | DC | DCFifty}
 Query :CHANnel<n>:COUPling?
 Returned Format [:CHANnel<n>:COUPling] {AC | DC | DCFifty}<NL>
 Where: <n> ::= integer, 1 or 2 (HP 54520C/54522C) or 1 through 4
 (HP 54540C/54542C)

:CHANnel<n>:DISPLay

Command :CHANnel<n>:DISPLay {{OFF | 0} | {ON | 1}}
 Query :CHANnel<n>:DISPLay?
 Returned Format [:CHANnel<n>:DISPLay] {0 | 1}<NL>
 Where: <n> ::= integer, 1 or 2 (HP 54520C/54522C) or 1 through 4
 (HP 54540C/54542C)

:CHANnel<n>:ECL

Command

:CHANnel<n>:ECL

Where:

<n> ::= integer, 1 or 2 (HP 54520C/54522C) or 1 through 4
(HP 54540C/54542C)

:CHANnel<n>:HFReject

Command

:CHANnel<n>:HFReject {(OFF | 0) | (ON | 1)}

Query

:CHANnel<n>:HFReject?

Returned Format

[:CHANnel<n>:HFReject] {0 | 1}<NL>

Where:

<n> ::= integer, 1 or 2 (HP 54520C/54522C) or 1 through 4
(HP 54540C/54542C)

:CHANnel<n>:LFReject

Command

:CHANnel<n>:LFReject {(OFF | 0) | (ON | 1)}

Query

:CHANnel<n>:LFReject?

Returned Format

[:CHANnel<n>:LFReject] {0 | 1}<NL>

Where:

<n> ::= integer, 1 or 2 (HP 54520C/54522C) or 1 through 4
(HP 54540C/54542C)

:CHANnel<n>:OFFSet

Command

:CHANnel<n>:OFFSet <offset_argument>

Query

:CHANnel<n>:OFFSet?

Returned Format

[:CHANnel<n>:OFFSet] <offset_argument><NL>

Where:

<n> ::= integer, 1 or 2 (HP 54520C/54522C) or 1 through 4
(HP 54540C/54542C)
<offset_argument> ::= exponential, offset value in volts

:CHANnel<n>:PROBe

Command	:CHANnel<n>:PROBe <probe_argument>
Query	:CHANnel<n>:PROBe?
Returned Format	[:CHANnel<n>:PROBe] <probe_argument><NL>
Where:	<n> ::= integer, 1 or 2 (HP 54520C/54522C) or 1 through 4 (HP 54540C/54542C) <probe_argument> ::= exponential, 0.9 to 1000.0

:CHANnel<n>:RANGe

Command	:CHANnel<n>:RANGe <range_argument>
Query	:CHANnel<n>:RANGe?
Returned Format	[:CHANnel<n>:RANGe] <range_argument><NL>
Where:	<n> ::= integer, 1 or 2 (HP 54520C/54522C) or 1 through 4 (HP 54540C/54542C) <range_argument> ::= exponential, full-scale range value

:CHANnel<n>:SETup

Query	:CHANnel<n>:SETup?
Returned Format	:CHAN<n>:COUP {AC DC DCF}; DISP {0 1}; HFR {0 1}; LFR {0 1}; OFFS <offset_argument>; PROB <probe_argument>; RANG<range_argument><NL>
Where:	<range_argument> ::= exponential, full-scale range value <offset_argument> ::= exponential, offset value in volts <probe_argument> ::= exponential, 0.9 to 1000.0 <n> ::= integer, 1 or 2 (HP 54520C/54522C) or 1 through 4 (HP 54540C/54542C)

:CHANnel<n>:TTL

Command	:CHANnel<n>:TTL
Where:	<n> ::= integer, 1 or 2 (HP 54520C/54522C) or 1 through 4 (HP 54540C/54542C)

<hr/>	
:DIGitize	
Command	:DIGitize CHANnel<n>[,CHANnel<n>[,CHANnel<n>[,CHANnel<n>]]]
Where:	<n> ::= integer, 1 or 2 (HP 54520C/54522C) or 1 through 4 (HP 54540C/54542C)
<hr/>	
:DISK:CDIRectory	
Command	:DISK:CDirectory <directory_name>
Where:	<directory_name> ::= 1 to 65 character quoted ASCII string
<hr/>	
:DISK:DELeTe	
Command	:DISK:DELeTe <file_name>
Where:	<file_name> ::= 1 to 8 character quoted ASCII string, if DOS, can have a 0 to 3 character extension
<hr/>	
:DISK:DIRectory?	
Query	:DISK:DIRectory?
Returned Format	[[:DISK:DIRectory] <number_of_files><cr><lf><directory>
Where:	<number_of_files> ::= integer, number of files (that follow) in the root directory <directory> ::= {<filename>,<ext>,<date>,<time>,<size>, <description><cr><lf>...} <ext> ::= {SETup WAVEform TEXT PIXel} <date> ::= DDMMYY <time> ::= HH:MM:SS <size> ::= an integer <description> ::= LIF format: Model + C1 + HP545XX + Source, DOS format: Model = DOS file (no description)
<hr/>	
:DISK:FORMat	
Command	:DISK:FORMat <format_type>
Where:	<format_type> ::= {DOS LIF}
<hr/>	

:DISK:LOAD

Command
Where:

```
:DISK:LOAD <file_name>,<destination> [,<format>]
<filename> ::= quoted ascii string DOS compatible filename.
    1 to 8 character ASCII string, if DOS, may have a 0 to 3
    character extension
    Either .wav or .txt may be used as a suffix after the
    filename. If no file suffix is specified, the default is
    .wav.
<destination> ::= {WMEemory {1 | 2 | 3 | 4 } |
    SETup{0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9} |
    PMEMory{ 1 | 2}}
<format>::= {TEXT | INTernal}
```

:DISK:MDIRectory

Command
Where:

```
:DISK:MDirectory <directory_name>
<directory_name> ::= 1 to 65 character quoted ASCII string
```

:DISK:PWD?

Query
Returned Format:

```
:DISK:PWD?
[:DISK:PWD] <present_working_directory>
```

:DISK:SIMage

Command
Where

```
:DISK:SIMage <file_name> [|,<format>| [|,<compression>|
|,<rendering>|]]
<filename>::= 1 to 8 character quoted ASCII string, if DOS,
    can have a 0 to 3 character extension
<format>::={TIFF | PCX | EPS}
<compression>::={ON | OFF}
<rendering>::={BW | COLOR [ GREen]}
```

:DISK:STORe

Command	:DISK:STORe <source>,<file_name>[,<format>]
Where:	<source> ::= {CHANnel<n> WMEMory{1 2 3 4} SETupN {0 1 2 3 4 5 6 7 8 9} PMEMemory {1 2} <n> ::= integer, 1 or 2 (HP 54520C/54522C) or 1 through 4 (HP 54540C/54542C) <filename> ::= a descriptive name of the file up to 8 characters long <format> ::= {INTernal TEXT [{<XYPairs> <YVALues> <VERBose>}]}

:DISPlay:COLumn

Command	:DISPlay:COLumn <column_number>
Query	:DISPlay:COLumn?
Returned Format	[:DISPlay:COLumn] <column_number><NL>
Where:	<column_number> ::= integer, 0 through 78

:DISPlay:CONNect

Command	:DISPlay:CONNect {{OFF 0} {ON 1}}
Query	:DISPlay:CONNect?
Returned Format	[:DISPlay:CONNect] {0 1}<NL>

:DISPlay:DATA

Command	:DISPlay:DATA <binary_block>
Query	:DISPlay:DATA?
Returned Format	[:DISPlay:DATA] #800016576<16576 bytes of binary data><NL>
Where:	<binary_block> ::= definite block data in # format

:DISPlay:FORMat

Command	:DISPlay:FORMat {1 2 4}
Query	:DISPlay:FORMat?
Returned Format	[:DISPlay:FORMat] {1 2 4}<NL>

:DISPlay:GRATicule

Command	:DISPlay:GRATicule {AXES GRID FRAME OFF}
Query	:DISPlay:GRATicule?
Returned Format	[[:DISPlay:GRATicule] {AXES GRID FRAME OFF}<NL>

:DISPlay:INVerse

Command	:DISPlay:INVerse {{OFF 0} {ON 1}}
Query	:DISPlay:INVerse?
Returned Format	[[:DISPlay:INVerse] {0 1}<NL>

:DISPlay:LINE

Command	:DISPlay:LINE <ascii_string>
Where:	<ascii_string> ::= any series of ascii characters enclosed in quotes

:DISPlay:MASK

Command	:DISPlay:MASK <mask_argument>
Query	:DISPlay:MASK?
Returned Format	[[:DISPlay:MASK] <mask_argument><NL>
Where:	<mask_argument> ::= integer, 0 through 255

:DISPlay:PERStistence

Command	:DISPlay:PERStistence {SINGle INFinite 0 {0.5 to 10} 11}}
Query	:DISPlay:PERStistence?
Returned Format	[[:DISPlay:PERStistence] <value><NL>
Where:	<value> ::= exponential, {0 (minimum) {0.5 to 10} 11 (infinite)} in the repetitive mode, {SINGle INFinite} in real-time mode

:DISPlay:ROW

Command	:DISPlay:ROW <row_number>
Query	:DISPlay:ROW?
Returned Format	[:DISPlay:ROW] <row_number><NL>
Where:	<row_number> ::= integer, 0 through 24

:DISPlay:SCReen

Command	:DISPlay:SCReen { {OFF 0} {ON 1} }
Query	:DISPlay:SCReen?
Returned Format	[:DISPlay:SCReen] { 0 1 }<NL>

:DISPlay:SEtUp?

Query	:DISPlay:SEtUp?
Returned Format	:DISP:COL <column_number>; CONN { 0 1 }; FORM { 1 2 4 }; GRAT { AXES FRAM GRID OFF }; INV { 0 1 }; MASK <mask_argument>; PERS <pers_argument>; ROW <row_number>; SCR { 0 1 }; SOUR PMEM { 0 1 2 }; MARK { 0 1 }<NL>
Where:	<column_number> ::= integer, 0 through 78 <mask_argument> ::= integer, 0 to 255 <pers_argument> ::= exponential, { 0 .5 to 10 11 } in the repetitive mode, { SINGLE INFinite } in the real-time mode <row_number> ::= integer, 0 to 24

:DISPlay:SOURce

Command	:DISPlay:SOURce PMEMory { 0 1 2 }
Query	:DISPlay:SOURce?
Returned Format	[:DISPlay:SOURce] PMEMory { 0 1 2 }<NL>

:DISPlay:STRing

Command :DISPlay:STRing <string_argument>
 Where: <string_argument> ::= text string up to 90 characters

:DISPlay:TEXT

Command :DISPlay:TEXT BLANK

:DISPlay:{MARKer|TMARker|VMARker}

Command :DISPlay:{MARKer|TMARker|VMARker} {{OFF | 0} | {ON | 1}}
 Query :DISPlay:MARKer|TMARker|VMARker?
 Returned Format [:DISPlay:MARKer|TMARker|VMARker] {0 | 1}<NL>

:ERASe

Command :ERASe {PMEMory0<pmemory_num>}
 Where: <pmemory_num> ::= integer, 1 or 2 @MODULE RULE =

:EXTErnal:COUPling

Command :EXTErnal:COUPling {AC | DC | DCFifty}
 Query :EXTErnal:COUPling?
 Returned Format [:EXTErnal:COUPling] {AC | DC | DCFifty}<NL>

:EXTErnal:HFRejeCt

Command :EXTErnal:HFRejeCt {{OFF | 0} | {ON | 1}}
 Query :EXTErnal:HFRejeCt?
 Returned Format [:EXTErnal:HFRejeCt] {0 | 1}<NL>

:EXtErnal:LFRejEcT	
Command	:EXtErnal:LFRejEcT {{OFF 0} {ON 1}}
Query	:EXtErnal:LFRejEcT?
Returned Format	[:EXtErnal:LFRejEcT] {0 1} <NL>
:EXtErnal:PROBe	
Command	:EXtErnal:PROBe <probe_argument>
Query	:EXtErnal:PROBe?
Returned Format	[:EXtErnal:PROBe] <probe_argument> <NL> <probe_argument> ::= exponential, 0.9 to 1000.0
:EXtErnal:RANGe	
Command	:EXtErnal:RANGe <range_argument>
Query	:EXtErnal:RANGe?
Returned Format	[:EXtErnal:RANGe] <range_argument> <NL> <range_argument> ::= exponential, full-scale range value
:EXtErnal:SEtUp	
Query	:EXtErnal:SEtUp?
Returned Format	:EXT:COUP {AC DC DCF}; HFR {0 1}; LFR {0 1}; PROB <probe_argument>; RANG<range_argument><NL>
Where:	<range_argument> ::= exponential, full-scale range value <probe_argument> ::= exponential, 0.9 to 1000.0
:FUNcTion{1 2 3 4}:ADD	
Command	:FUNcTion{1 2 3 4}:ADD <operand>, <operand>
Where:	<operand> ::= {CHANnel<n> WMEMoRY{1 2 3 4}} <n> ::= integer, 1 or 2 (HP 54520C/54522C) or 1 through 4 (HP 54540C/54542C)

:FUNCTION{1 | 2 | 3 | 4}:DIFF

Command :FUNCTION{1 | 2 | 3 | 4}:DIFF <operand>
 Where: <operand> ::= {CHANnel<n> | WMEMory{1 | 2 | 3 | 4}}
 <n> ::= integer, 1 or 2 (HP 54520C/54522C) or 1 through 4
 (HP 54540C/54542C)

:FUNCTION{1 | 2 | 3 | 4}:DISPLay

Command :FUNCTION{1 | 2 | 3 | 4}:DISPLay {{OFF | 0} | {ON | 1}}
 Query :FUNCTION{1 | 2 | 3 | 4}:DISPLay?
 Returned Format [:FUNCTION{1 | 2 | 3 | 4}[:DISPLay] {0 | 1}<NL>

:FUNCTION{1 | 2 | 3 | 4}:FFT

Command :FUNCTION{1 | 2 | 3 | 4}:FFT <operand>
 Where: <operand> ::= {CHANnel<n> | WMEMory{1 | 2 | 3 | 4}}
 <n> ::= integer, 1 or 2 (HP 54520C/54522C) or 1 through 4
 (HP 54540C/54542C)

:FUNCTION{1 | 2 | 3 | 4}:FREQuency

Command :FUNCTION{1 | 2 | 3 | 4}:FREQuency <frequency_argument>
 Query :FUNCTION{1 | 2 | 3 | 4}:FREQuency?
 Returned Format [:FUNCTION{1 | 2 | 3 | 4}:FREQuency] <frequency_argument><NL>
 Where: <frequency_argument> ::= exponential, center frequency from
 0 Hz to 1.5X of frequency span

:FUNCTION{1 | 2 | 3 | 4}:INTegrate

Command :FUNCTION{1 | 2 | 3 | 4}:INTegrate <operand>
 Where: <operand> ::= {CHANnel<n> | WMEMory{1 | 2 | 3 | 4}}
 <n> ::= integer, 1 or 2 (HP 54520C/54522C) or 1 through 4
 (HP 54540C/54542C)

:FUNCTION{1 | 2 | 3 | 4}:INVert

Command
Where:

```
:FUNCTION{1 | 2 | 3 | 4}:INVert <operand>
<operand> ::= {CHANnel<n> | WMemory{1 | 2 | 3 | 4}}
<n> ::= integer, 1 or 2 (HP 54520C/54522C) or 1 through 4
      (HP 54540C/54542C)
```

:FUNCTION{1 | 2 | 3 | 4}:LEVel

Command
Query
Returned Format
Where:

```
:FUNCTION{1 | 2 | 3 | 4}:LEVel <level_argument>
:FUNCTION{1 | 2 | 3 | 4}:LEVel?
[:FUNCTION{1 | 2 | 3 | 4}:LEVel] <level_argument><NL>
<level_argument> ::= exponential, level value 0 to + or -
      600 dbm
```

:FUNCTION{1 | 2 | 3 | 4}:MAGNify

Command
Query
Returned Format

```
:FUNCTION{1 | 2 | 3 | 4}:MAGNify {{OFF | 0} | {ON | 1}}
:FUNCTION{1 | 2 | 3 | 4}:MAGNify?
[:FUNCTION{1 | 2 | 3 | 4}:MAGNify] {0 | 1}<NL>
```

:FUNCTION{1|2|3|4}:MODE?

Query
Returned Format

Where:

```
:FUNCTION{1 | 2 | 3 | 4}:MODE?
[:FUNCTION{1 | 2 | 3 | 4}:MODE]
<operation>,<operand>[,<operand>]
<operation> ::= {ADD | SUBtract | MULTiply | VERSus | ONLY |
      INVert | INTEgrate | DIFF | FFT}
<operand> ::= {CHANnel<n> | WMemory{1 | 2 | 3 | 4}}
<n> ::= integer, 1 or 2 (HP 54520C/54522C) or 1 through 4
      (HP 54540C/54542C)
```

:FUNCTION{1 | 2 | 3 | 4}:MULTiply

Command
Where:

```
:FUNCTION{1 | 2 | 3 | 4}:MULTiply <operand>,<operand>
<operand> ::= {CHANnel<n> | WMemory{1 | 2 | 3 | 4}}
<n> ::= integer, 1 or 2 (HP 54520C/54522C) or 1 through 4
      (HP 54540C/54542C)
```

:FUNCTION{1 | 2 | 3 | 4}:OFFSet

Command	:FUNCTION{1 2 3 4}:OFFSet <offset_argument>
Query	:FUNCTION{1 2 3 4}:OFFSet?
Returned Format	[:FUNCTION{1 2 3 4}:OFFSet] <offset_argument><NL>
Where:	<offset_argument> ::= exponential, offset value of 0 to ±voltage full scale, or 0 to ±200 dbm for FFT

:FUNCTION{1 | 2 | 3 | 4}:ONLY

Command	:FUNCTION{1 2 3 4}:ONLY <operand>
Where:	<operand> ::= {CHANnel<n> WMEMory{1 2 3 4}} <n> ::= integer, 1 or 2 (HP 54520C/54522C) or 1 through 4 (HP 54540C/54542C)

:FUNCTION{1 | 2 | 3 | 4}:PEAK

Command	:FUNCTION{1 2 3 4}:PEAK <peak1_number>,<peak2_number>
Query	:FUNCTION{1 2 3 4}:PEAK?
Returned Format	[:FUNCTION{1 2 3 4}:PEAK] <peak1_number>,<peak2_number><NL>
Where:	<peak1_number> ::= integer, 1 through 99 <peak2_number> ::= integer, 1 through 99

:FUNCTION{1 | 2 | 3 | 4}:POINTs

Command	:FUNCTION{1 2 3 4}:POINTs <points_argument>
Query	:FUNCTION{1 2 3 4}:POINTs?
Returned Format	[:FUNCTION{1 2 3 4}:POINTs] <points_argument><NL>
Where:	<points_argument> ::= integer, 512, 1024, 2048, 4096, 8192, 16384, or 32768

:FUNCTION{1 | 2 | 3 | 4}:RANGe

Command	:FUNCTION{1 2 3 4}:RANGe <range_argument>
Query	:FUNCTION{1 2 3 4}:RANGe?
Returned Format	[:FUNCTION{1 2 3 4}:RANGe] <range_argument><NL>
Where:	<range_argument> ::= exponential full scale vertical range in volts, dB, or dBm

:FUNCTION{1 | 2 | 3 | 4}:SETup?

Query
Returned Format

```
:FUNCTION{1 | 2 | 3 | 4}:SETup?
:FUNCTION{1 | 2 | 3 | 4}:DISP {0|1};
{ADD | SUBT | MULT | VERS | ONLY | INV | INT | DIFF |
FFT} {CHAN<n> | WMEM {1 | 2 | 3 | 4} [, {CHAN<n> |
WMEM {1 | 2 | 3 | 4}}];
OFF <offset_argument>;
RANG <range_argument>;
FREQ <frequency_argument>; (FFT only)
LEV <level_argument>; (FFT only)
MAGN {0 | 1}; (FFT only)
PEAK <peak1_number>, <peak2_number>; (FFT only)
POIN <points_argument>; (FFT only)
SPAN <span_argument>; (FFT only)
WIND {RECT | HANN | FLAT} (FFT only) <NL>
```

Where:

```
<n> ::= integer, 1 or 2 (HP 54520C/54522C) or 1 through 4
      (HP 54540C/54542C)
<offset_argument> ::= exponential offset value of 0 to  $\pm 200$ 
      dBm for FFT function
<range_argument> ::= exponential full scale vertical range in
      volts, dB, or dBm
<frequency_argument> ::= exponential center frequency from
      0 Hz to 1.5X of frequency span
<level_argument> ::= exponential level value 0 to  $\pm 600$  dBm
<peak1_number> ::= integer, 1 through 99
<peak2_number> ::= integer, 1 through 99
<points_argument> ::= integer, 512, 1024, 2048, 4096, 8192,
      16384, or 32768
<span_argument> ::= exponential number in hertz
```

:FUNCTION{1 | 2 | 3 | 4}:SPAN

Command
Query
Returned Format
Where:

```
:FUNCTION{1 | 2 | 3 | 4}:SPAN <span_argument>
:FUNCTION{1 | 2 | 3 | 4}:SPAN?
[:FUNCTION{1 | 2 | 3 | 4}:SPAN] <span_argument> <NL>
<span_argument> ::= exponential number in hertz
```

:FUNCTION{1 | 2 | 3 | 4}:SUBTRACT

Command
Where:

```
:FUNCTION{1 | 2 | 3 | 4}:SUBTRACT <operand1>,<operand2>
<operand1> ::= {CHANNEL<n> | WMemory{1 | 2 | 3 | 4}}
<operand2> ::= {CHANNEL<n> | WMemory{1 | 2 | 3 | 4}}
<n> ::= integer, 1 or 2 (HP 54520C/54522C) or 1 through 4
(HP 54540C/54542C)
```

:FUNCTION{1 | 2 | 3 | 4}:VERSUS

Command
Where:

```
:FUNCTION{1 | 2 | 3 | 4}:VERSUS <Y_operand>,<X_operand>
<Y_operand1> ::= {CHANNEL<n> | WMemory{1 | 2 | 3 | 4}}
<X_operand2> ::= {CHANNEL<n> | WMemory{1 | 2 | 3 | 4}}
<n> ::= integer, 1 or 2 (HP 54520C/54522C) or 1 through 4
(HP 54540C/54542C)
```

:FUNCTION{1 | 2 | 3 | 4}:WINDOW

Command
Query
Returned Format

```
:FUNCTION{1 | 2 | 3 | 4}:WINDOW {RECTangular | HANNing |
    FLATtop}
:FUNCTION:WINDOW?
[:FUNCTION{1|2|3|4}:WINDOW] {RECTangular | HANNing |
    FLATtop}<NL>
```

:HARDcopy:LENGTH

Command
Query
Returned Format

```
:HARDcopy:LENGTH {11 | 11.6 | LETTER | A4}
:HARDcopy:LENGTH?
[:HARDcopy:LENGTH] {11 | 11.6 | LETTER | A4}<NL>
```

:HARDcopy:MODE

Command	:HARDcopy:MODE {THINKJET DJ5XBW75DPI DJ5XBW100DPI DJ5XBW150DPI DJ5XBW300DPI DJET75DPI DJET100DPI DJET150DPI DJET300DPI LASERJET_II LASERJET_IIP PJETXL300 PJETXL PAINTJET COLORPRO HP7475A HP7470A HP7550A DJET310C DJET320C DJET500C DJET540C DJET560C DJET600C DJET660C DJET850C DJET855C P1200C QUIETJETALT EPSON5000}
Query	:HARDcopy:MODE?
Returned Format	[[:HARDcopy:MODE] {THINKJET DJ5XBW75DPI DJ5XBW100DPI DJ5XBW150DPI DJ5XBW300DPI DJET75DPI DJET100DPI DJET150DPI DJET300DPI LASERJET_II LASERJET_IIP PJETXL300 PJETXL PAINTJET COLORPRO HP7475A HP7470A HP7550A DJET310C DJET320C DJET500C DJET540C DJET560C DJET600C DJET660C DJET850C DJET855C P1200C QUIETJETALT EPSON5000}<NL>

:HARDcopy:PAGE

Command	:HARDcopy:PAGE {MANual AUTomatic}
Query	:HARDcopy:PAGE?
Returned Format	[[:HARDcopy:PAGE] {MANual AUTomatic}<NL>

:HARDcopy:PLOT:AREA

Command	:HARDcopy:PLOT:AREA {ALL DISPlay FACTors GRATICule LABeled}
Query	:HARDcopy:PLOT:AREA?
Returned Format	[[:HARDcopy:PLOT:AREA] {ALL DISPlay FACTors GRATICule LABeled}<NL>

:HARDcopy:PLOT:INITialize

Command	:HARDcopy:PLOT:INITialize {{OFF 0} {ON 1}}
Query	:HARDcopy:PLOT:INITialize?
Returned Format	[[:HARDcopy:PLOT:INITialize] {0 1}<NL>

:HARDcopy:PLOT:{PEN|COLor}

Command	:HARDcopy:PLOT:{PEN COLor } <item>,<pen_number>
Query	:HARDcopy:PLOT:{PEN COLor}? <item>
Returned Format	[:HARDcopy:PLOT:{PEN COLor}] <pen_number><NL>
Where:	<p><item> ::= {CHANnel<n> WMEMory{1 2 3 4} FUNCTION{1 2 3 4} PMEMory{1 2} Y{1 2}Marker X{1 2}Marker GRATICule TRIGger TIMEbase MEASure TITLES}</p> <p><n> ::= integer, 1 or 2 (HP 54520C/54522C) or 1 through 4 (HP 54540C/54542C)</p> <p><pen_number> ::= integer, 0 through 8</p>

:LER?

Query	:LER?
Returned Format	[:LER] {0 1}<NL>

:LTER?

Query	:LTER?
Returned Format	[:LTER] {0 1}<NL>

:MARKer:DISPlay

Command	:MARKer:DISPlay {{OFF 0} {ON 1}}
Query	:MARKer:DISPlay?
Returned Format	[:MARKer:DISPlay] {0 1}<NL>

:MARKer:MODE

Command	:MARKer:MODE {MANual WAVeform}
Query	:MARKer:MODE?
Returned Format	[:MARKer:MODE] {MANual WAVeform}<NL>

:MARKer:SETup?

Query	:MARKer:SETup?
Returned Format	:MARK:MODE {MAN WAV};DISP {0 1}; XDEL <xdelta>; X1P <xposition_argument>; X2P <xposition_argument>; X1Y1 {CHAN<n> FUNC{1 2 3 4} WMEM{1 2 3 4}}; X2Y2 {CHAN<n> FUNC{1 2 3 4} WMEM{1 2 3 4}}; Y1P <yposition_argument>; (MAN mode only) Y2P <yposition_argument>; (MAN mode only) YDEL <ydelta>; (MAN mode only) Y1P <yposition_argument>; (MAN mode only) Y2P <yposition_argument><NL> (MAN mode only)
Where:	<n> ::= integer, 1 or 2 (HP 54520C/54522C) or 1 through 4 (HP 54540C/54542C) <xdelta> ::= exponential, difference in seconds between x1 and x2 markers <xposition_argument>::= exponential, xmarker position in seconds or hertz <ydelta>::= exponential, difference between y1 and y2 markers <yposition_argument>::= exponential, ymarker position in volts or power

:MARKer:X1Position

Command	:MARKer:X1Position <xposition_argument>
Query	:MARKer:X1Position?
Returned Format	[:MARKer:X1Position] <xposition_argument><NL>
Where:	<xposition_argument>::= exponential, xmarker time in seconds, or frequency in hertz

:MARKer:X2Position

Command	:MARKer:X2Position <xposition_argument>
Query	:MARKer:X2Position?
Returned Format	[:MARKer:X2Position] <xposition_argument><NL>
Where:	<xposition_argument> ::= exponential, xmarker time in seconds, or frequency in hertz

:MARKer:X1Y1source

Command :MARKer:X1Y1source {CHANnel<n> | {FUNctIon{1 | 2 | 3 | 4} | WMEMory{1 | 2 | 3 | 4}}
Query :MARKer:X1Y1source?
Returned Format [:MARKer:X1Y1source] {CHANnel<n>| {FUNctIon{1 | 2 | 3 | 4} | WMEMory{1 | 2 | 3 | 4}}<NL>
Where: <n> ::= integer, 1 or 2 (HP 54520C/54522C) or 1 through 4 (HP 54540C/54542C)

:MARKer:X2Y2source

Command :MARKer:X2Y2source {CHANnel<n> | {FUNctIon{1 | 2 | 3 | 4} | WMEMory{1 | 2 | 3 | 4}}
Query :MARKer:X2Y2source?
Returned Format [:MARKer:X2Y2source] {CHANnel<n>| {FUNctIon{1 | 2 | 3 | 4} | WMEMory{1 | 2 | 3 | 4}}<NL>
Where: <n> ::= integer, 1 or 2 (HP 54520C/54522C) or 1 through 4 (HP 54540C/54542C)

:MARKer:XDELta?

Query :MARKer:XDELta?
Returned Format [:MARKer:XDELta] <xdelta><NL>
Where: <xdelta> ::= exponential, difference between x1 and x2 markers

:MARKer:Y1Position (Command ignored in waveform mode)

Command :MARKer:Y1Position <yposition_argument>
Query :MARKer:Y1Position?
Returned Format [:MARKer:Y1Position] <yposition_argument><NL>
Where: <yposition_argument> ::= exponential, ymarker level in volts, or power in dBm

<hr/>	
	:MARKer:Y2Position (Command ignored in waveform mode)
Command	:MARKer:Y2Position <yposition_argument>
Query	:MARKer:Y2Position?
Returned Format	[[:MARKer:Y2Position] <yposition_argument><NL>
Where:	<yposition_argument> ::= exponential, ymarker level in volts, or power in dBm
<hr/>	
	:MARKer:YDELta?
Query	:MARKer:YDELta?
Returned Format	[[:MARKer:YDELta] <ydelta><NL>
Where:	<ydelta> ::= exponential, difference between y1 and y2 markers
<hr/>	
	:MEASure:ALL?
Query	:MEASure:ALL?
Returned Format	[[:MEASure] [[:DELay] <result>; [:DUTYcycle] <result>; [:FALLtime] <result>; [:FREQuency] <result>; [:NWIDth] <result>; [:OVERshoot] <result>; [:PERiod] <result>; [:PREShoot] <result>; [:PWIDth] <result>; [:RISetime] <result>; [:VACRms] <result>; [:VAMplitude] <result>; [:VAverage] <result>; [:VBASe] <result>; [:VDCRms] <result>; [:VMAX] <result>; [:VMIN] <result>; [:VPP] <result>; [:VTOp] <result>;<NL>
Where:	<result> ::=exponential, individual measurement results
<hr/>	
	:MEASure:COMPare
Command	:MEASure:COMPare <measurement>,<upper_limit>,<lower_limit>
Query	:MEASure:COMPare? <measurement>
Returned Format	[[:MEASure:COMPare] <measurement>,<upper_limit>,<lower_limit><NL>
Where:	<measurement> ::= {DELay DUTYcycle FALLtime FREQuency NWIDth OVERshoot PERiod PREShoot PWIDth RISetime VACRms VAMplitude VAverage VBASe VDCRms VMAX VMIN VPP VTOp} <upper_limit> ::= exponential, high limit value <lower_limit> ::=exponential, low limit value
<hr/>	

:MEASure:CURSor?

Query	:MEASure:CURSor? {DELTA START STOP}
Returned Format	[:MEASure:CURSor] <time>,<voltage><NL>
Where:	<time> ::= exponential, delta time, y1marker time, or y2marker time <voltage> ::= exponential, delta voltage, x1marker voltage, or x2marker voltage

:MEASure:DEFine

Command	:MEASure:DEFine <define_argument>
Query	:MEASure:DEFine? {DELay PWIDTH NWIDTH}
Returned Format	[:MEASure:DEFine] <define_argument><NL>
Where:	<define_argument> ::= {DELay,<polarity>,<edge_number>,<level>,<polarity>,<edge_number>,<level> PWIDTH,<level> NWIDTH,<level>} <polarity> ::= {POSitive NEGative} <edge_number> ::= integer, 1 to 4000 specifying a displayed edge <level> ::= {MIDDLE UPPER LOWER}

:MEASure:DELay

Command	:MEASure:DELay
Query	:MEASure:DELay?
Returned Format	[:MEASure:DELay] <value><NL>
Where:	<value> ::= exponential, time value in seconds

:MEASure:DESTination

Command :MEASure:DESTination <source_argument>,<destination_argument>
Query :MEASure:DESTination? {CHANnel<n> | FUNction{1 | 2 | 3 | 4} | SCReen}?
Returned Format [:MEASure:DESTination] {{CHANnel<n> | {FUNction{1 | 2 | 3 | 4} | SCReen}} {WMEMoery{1 | 2 | 3 | 4} | PMEMoery{1 | 2} | MULTiple | OFF}<NL>
Where: <source_argument> ::= {{SCReen,{OFF | PMEMoery{1 | 2}}}} | {{CHANnel<n> | FUNction{1 | 2 | 3 | 4}}}
 <distination_argument> ::= {WMEMoery{1 | 2 | 3 | 4} | MULTiple | OFF}
 <n> ::= integer, 1 or 2 (HP 54520C/54522C) or 1 through 4 (HP 54540C/54542C)

:MEASure:DUTycycle

Command :MEASure:DUTycycle
Query :MEASure:DUTycycle?
Returned Format [:MEASure:DUTycycle] <value><NL>
Where: <value> ::= exponential, ratio of positive pulse width to period

:MEASure:ESTArt

Command :MEASure:ESTArt <slope_and_occurrence>
Query :MEASure:ESTArt?
Returned Format [:MEASure:ESTArt] <slope_and_occurrence><NL>
Where: <slope_and_occurrence> ::= integer, -4000 to 4000 (excluding 0)

:MEASure:ESTOp

Command :MEASure:ESTOp <slope_and_occurrence>
Query :MEASure:ESTOp?
Returned Format [:MEASure:ESTOp] <slope_and_occurrence><NL>
Where: <slope_and_occurrence> ::= integer, -4000 to 4000 (excluding 0)

:MEASure:EANalysis

Command	:MEASure:EANalysis {{OFF 0} {ON 1}}
Query	:MEASure:EANalysis?
Returned Format	[[:MEASure:EANalysis] {0 1}<NL>

:MEASure:FALLtime

Command	:MEASure:FALLtime
Query	:MEASure:FALLtime?
Returned Format	[[:MEASure:FALLtime] <value><NL>
Where:	<value> ::= exponential, time value in seconds between lower threshold and upper threshold voltage points

:MEASure:FREQuency

Command	:MEASure:FREQuency
Query	:MEASure:FREQuency?
Returned Format	[[:MEASure:FREQuency] <value><NL>
Where:	<value> ::= exponential, frequency in hertz

:MEASure:LIMittest

Command	:MEASure:LIMittest {MEASure OFF}
---------	------------------------------------

:MEASure:LOWer

Command	:MEASure:LOWer [<source>,<lower_threshold>
Query	:MEASure:LOWer? [<source>]
Returned Format	[[:MEASure:LOWer] <source>,<lower_threshold><NL>
Where:	<p><source> ::= {CHANnel<n> FUNction{1 2 3 4} WMemory{1 2 3 4}}</p> <p><lower_threshold> ::= integer, user defined lower threshold in percent or volts (selected by :MEASure:UNITs)</p> <p><n> ::= integer 1 or 2 (HP 54520C/54522C), or 1 through 4 (HP 54540C/54542C)</p>

:MEASure:MODE	
Command	:MEASure:MODE {STANDARD USER}
Query	:MEASure:MODE?
Returned Format	[[:MEASure:MODE] {STANDARD USER}<NL>
:MEASure:MWINDow	
Command	:MEASure:MWINDow {MARKers SCReen}
Query	:MEASure:MWINDow?
Returned Format	[[:MEASure:MWINDows] {MARKers SCReen}<NL>
:MEASure:NWIDth	
Command	:MEASure:NWIDth
Query	:MEASure:NWIDth?
Returned Format	[[:MEASure:NWIDth] <value><NL>
Where:	<value> ::= exponential, negative pulse width in seconds
:MEASure:OVERshoot	
Command	:MEASure:OVERshoot
Query	:MEASure:OVERshoot?
Returned Format	[[:MEASure:OVERshoot] <value><NL>
Where:	<value> ::= exponential, ratio of overshoot to Vamplitude
:MEASure:PERiod	
Command	:MEASure:PERiod
Query	:MEASure:PERiod?
Returned Format	[[:MEASure:PERiod] <value><NL>
Where:	<value> ::= exponential, waveform period in seconds
:MEASure:POSTfailure	
Command	:MEASure:POSTfailure {CONTInue STOP}
Query	:MEASure:POSTfailure?
Returned Format	[[:MEASure:POSTfailure] {CONTInue STOP}<NL>

:MEASure:PREShoot

Command	:MEASure:PREShoot
Query	:MEASure:PREShoot?
Returned Format	[[:MEASure:PREShoot] <value><NL>
Where:	<value> ::= exponential, ratio of preshoot to Vamplitude

:MEASure:PWIDth

Command	:MEASure:PWIDth
Query	:MEASure:PWIDth?
Returned Format	[[:MEASure:PWIDth] <value><NL>
Where:	<value> ::= exponential, width of positive pulse in sseconds

:MEASure:RESults?

Query	:MEASure:RESults?
Returned Format	[[:MEASure:RESults] <number_of_meas>[;<measurement>]...<NL>
Where:	<number_of_meas> ::= integer, number of measurements displayed on the screen, 0 through 23 <measurement> ::= {DELay <result> DUTycycle <result> FALLtime <result> FREQuency <result> NWIDth <result> OVERshoot <result> PERiod <result> PREShoot <result> PWIDth <result> RISetime <result> TMAX <result> TMIN <result> TVOLt <result> VACRms <result> VAMplitude <result> VAverage <result> VBASe <result> VDCRms <result> VMAX <result> VMIN <result> VPP <result> VTIME <result> VTOP <result>} <result> ::=exponential, individual measurement results

:MEASure:RISetime

Command	:MEASure:RISetime
Query	:MEASure:RISetime?
Returned Format	[[:MEASure:RISetime] <value><NL>
Where:	<value> ::= exponential, rise time in seconds

:MEASure:SCRatch	
Command	:MEASure:SCRatch
:MEASure:SOURce	
Command	:MEASure:SOURce <source>[,<source>]
Query	:MEASure:SOURce?
Returned Format	[[:MEASure:SOURce] <source>[,<source>]<NL>
Where:	<source> ::= {CHANnel<n> FUNCTION{1 2 3 4} WMEMory{1 2 3 4}} <n> ::= integer, 1 or 2 (HP 54520C/54522C), or 1 through 4 (HP 54540C/54542C)
:MEASure:STATistics	
Command	:MEASure:STATistics {{OFF 0} {ON 1}}
Query	:MEASure:STATistics?
Returned Format	[[:MEASure:STATistics] {0 1}<NL>
MEASure:STATistics:MODE	
Command	:MEASure:STATistics:MODE {NORMAL SDEVIation}}
Query	:MEASure:STATistics:MODE?
Returned Format	[[:MEASure:STATistics:MODE] {NORMAL SDEVIation}<NL>
:MEASure:TDELta	
Query	:MEASure:TDELta?
Returned Format	[[:MEASure:TDELta] <value><NL>
Where:	<value> ::= exponential, difference between x2 and x1 markers
:MEASure:TMAX?	
Query	:MEASure:TMAX?
Returned Format	[[:MEASure:TMAX] <time><NL>
Where:	<time> ::= exponential, time at maximum voltage

:MEASure:TMIN?

Query
Returned Format
Where: :MEASure:TMIN?
 [:MEASure:TMIN] <time><NL>
 <time> ::= exponential, time at minimum voltage

:MEASure:TSTArt

Command
Query
Returned Format
Where: :MEASure:TSTArt <tstart _argument>
 :MEASure:TSTArt?
 [:MEASure:TSTArt] <tstart _argument><NL>
 <tstart_argument> ::= exponential, time at x1marker in seconds

:MEASure:TSTOp

Command
Query
Returned Format
Where: :MEASure:TSTOp <tstop_argument>
 :MEASure:TSTOp?
 [:MEASure:TSTOp] <tstop _argument><NL>
 <tstop_argument> ::= exponential, time at x2marker in seconds

:MEASure:TVOLT?

Query
Returned Format
Where: :MEASure:TVOLT? <tvolt_argument>,<slope_and_occurrence>
 [:MEASure:TVOLT] <time><NL>
 <tvolt_argument> ::= real number representing positive or
 negative voltage level that the waveform must cross
 <slope_and_occurrence> ::= slope is the direction of the
 waveform when <voltage> is crossed - rising (space character
 or +) or falling (-)
 occurrence is the number of crossings to be reported (if one
 - the first crossing is reported, if two - the second
 crossing is reported
 <time> ::= exponential, time in seconds of specified voltage
 crossing

:MEASure:UNITs

Command	:MEASure:UNITs {PERCent VOLTs}
Query	:MEASure:UNITs?
Returned Format	[:MEASure:UNITs] {PERCent VOLTs} <NL>

:MEASure:UPPer

Command	:MEASure:UPPer [<source>,<upper_threshold>
Query	:MEASure:UPPer? [<source>]
Returned Format	[:MEASure:UPPer] <source>,<upper_threshold> <NL>
Where:	<source> ::= {CHANnel<n> FUNCTION{1 2 3 4} WMEMory{1 2 3 4}} <upper_threshold> ::= integer, user defined upper threshold in percent or volts (selected by :MEASure:UNITs) <n> ::= integer, 1 or 2 (HP 54520C/54522C), or 1 through 4 (HP 54540C/54542C)

:MEASure:VACRms

Command	:MEASure:VACRms
Query	:MEASure:VACRms?
Returned Format	[:MEASure:VACRms] <value> <NL>
Where:	<value> ::= exponential, calculated ac rms voltage

:MEASure:VAMPlitude

Command	:MEASure:VAMPlitude
Query	:MEASure:VAMPlitude?
Returned Format	[:MEASure:VAMPlitude] <value> <NL>
Where:	<value> ::= exponential, difference between top and base voltages

:MEASure:VAVerage

Command	:MEASure:VAVerage
Query	:MEASure:VAVerage?
Returned Format	[:MEASure:VAVerage] <value> <NL>
Where:	<value> ::= exponential, calculated average voltage

:MEASure:VBASe

Command	:MEASure:VBASe
Query	:MEASure:VBASe?
Returned Format	[[:MEASure:VBASe] <value><NL>
Where:	<value> ::= exponential, voltage at base of selected waveform

:MEASure:VDCRms

Command	:MEASure:VDCRms
Query	:MEASure:VDCRms?
Returned Format	[[:MEASure:VDCRms] <value><NL>
Where:	<value> ::= exponential, calculated dc rms voltage

:MEASure:VDELta?

Query	:MEASure:VDELta?
Returned Format	[[:MEASure:VDELta] <value><NL>
Where:	<value> ::= exponential, delta V value in volts

:MEASure:VFIFty

Command	:MEASure:VFIFty
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:MEASure:VMAX

Command	:MEASure:VMAX
Query	:MEASure:VMAX?
Returned Format	[[:MEASure:VMAX] <value><NL>
Where:	<value>::= exponential, maximum voltage of selected waveform

:MEASure:VMIN

Command	:MEASure:VMIN
Query	:MEASure:VMIN?
Returned Format	[[:MEASure:VMIN] <value><NL>
Where:	<value> ::= exponential, minimum voltage value of the selected waveform

:MEASure:VPP	
Command	:MEASure:VPP
Query	:MEASure:VPP?
Returned Format	[[:MEASure:VPP] <value><NL>
Where:	<value> ::= exponential, voltage peak to peak
:MEASure:VRELative	
Command	:MEASure:VRELative <percent_argument>
Query	:MEASure:VRELative?
Returned Format	[[:MEASure:VRELative] <percent_argument><NL>
Where:	<percent_argument> ::= integer, Vmarker2 relative position in percent, from 0 through 100
:MEASure:VSTArt	
Command	:MEASure:VSTArt <vstart_argument>
Query	:MEASure:VSTArt?
Returned Format	[[:MEASure:VSTArt] <vstart_argument><NL>
Where:	<vstart_argument> ::= exponential, voltage at y1marker
:MEASure:VSTOp	
Command	:MEASure:VSTOp <vstop_argument>
Query	:MEASure:VSTOp?
Returned Format	[[:MEASure:VSTOp] <vstop_argument><NL>
Where:	<vstop_argument> ::= exponential, voltage at y2marker
:MEASure:VTIME?	
Query	:MEASure:VTIME? <vtime_argument>
Returned Format	[[:MEASure:VTIME] <voltage><NL>
Where:	<vtime_argument> ::= real number representing the displayed time from the trigger in seconds <voltage> ::= exponential, voltage at specified time

:MEASure:VTOP

Command	:MEASure:VTOP
Query	:MEASure:VTOP?
Returned Format	[[:MEASure:VTOP] <value><NL>
Where:	<value> ::= exponential, voltage at the top of the waveform

:MEASure:WCOMpare:ALLowance

Command	:MEASure:WCOMpare:ALLowance <allow_argument>
Query	:MEASure:WCOMpare:ALLowance?
Returned Format	[[:MEASure:WCOMpare:ALLowance] <allow_argument><NL>
Where:	<allow_argument> ::= real number representing number of vertical divisions of allowance, from 0.0 to 8.0

:MEASure:WCOMpare:COMpare

Command	:MEASure:WCOMpare:COMpare {CHANnel<n> FUNCTION{1 2 3 4}}, WMEMory{1 2 3 4}}
Query	:MEASure:WCOMpare:COMpare?
Returned Format	[[:MEASure:WCOMpare:COMpare] {CHANnel<n> FUNCTION{1 2 3 4}}, WMEMory{1 2 3 4}<NL>
Where:	<n> ::= integer, 1 or 2 (HP 54520C/54522C), or 1 through 4 (HP 54540C/54542C)

:MEASure:WCOMpare:DESTination

Command	:MEASure:WCOMpare:DESTination <source_argument>,<destination_argument>
Query	:MEASure:WCOMpare:DESTination? {CHANnel<n> FUNCTION{1 2 3 4} SCreen}
Returned Format	[[:MEASure:WCOMpare:DESTination] {CHANnel<n>} {FUNCTION{1 2 3 4} SCreen}] {WMEMory{1 2 3 4} PMEMory{1 2} MULTiple OFF}<NL>
Where:	<source_argument> ::= {{SCreen,{OFF PMEMory{1 2}}}} {{CHANnel<n> FUNCTION{1 2 3 4}}} <distination_argument> ::= {WMEMory{1 2 3 4} MULTiple PMEMory{1 2} OFF} <n> ::= integer, 1 or 2 (HP 54520C/54522C) or 1 through 4 (HP 54540C/54542C)

:MEASure:WCOMpare:HALLowance

Command	:MEASure:WCOMpare:HALLowance <allow_argument>
Query	:MEASure:WCOMpare:HALLowance?
Returned Format	[[:MEASure:WCOMpare:HALLowance] <allow_argument><NL>
Where:	<allow_argument> ::= real number representing number of horizontal divisions of allowance, from 0.0 to 8.0

:MEASure:WCOMpare:POSTfailure

Command	:MEASure:WCOMpare:POSTfailure {CONTINUE STOP}
Query	:MEASure:WCOMpare:POSTfailure?
Returned Format	[[:MEASure:WCOMpare:POSTfailure] {CONTINUE STOP}<NL>

:MEASure:WCOMpare:VALLowance

Command	:MEASure:WCOMpare:VALLowance <allow_argument>
Query	:MEASure:WCOMpare:VALLowance?
Returned Format	[[:MEASure:WCOMpare:VALLowance] <allow_argument><NL>
Where:	<allow_argument> ::= real number representing number of vertical divisions of allowance, from 0.0 to 8.0

:MEASure:WCOMpare:WTEST

Command	:MEASure:WCOMpare:WTEST {MEASure OFF}
Query	:MEASure:WCOMpare:WTEST?
Returned Format	[[:MEASure:WCOMpare:WTEST] {MEASure OFF}<NL>

:MENU

Command	:MENU {CHANnel<n>TIMebase TRIGger DISK DISPlay DELTa MATH SAVE MEASure UTILity SHOW}
Query	:MENU?
Returned Format	[[:MENU] {CHANnel<n>TIMebase TRIGger DISK DISPlay DELTa MATH SAVE MEASure UTILity SHOW}
Where:	<n> ::= integer, 1 or 2 (HP 54520C/54522C), or 1 through 4 (HP 54540C/54542C)

:MERGe

Command :MERGe <pmemory_num>
 Where: <pmemory_num> ::= integer, 1 or 2

:MMEMory:DISPlay

Command :MMEMory:DISPlay {{OFF | 0} | {ON | 1}}
 Query :MMEMory:DISPlay?
 Returned Format [:MMEMory:DISPlay] {0 | 1}<NL>

:MMEMory:FNUMber

Command :MMEMory:FNUMber <failure_number>
 Query :MMEMory:FNUMber?
 Returned Format [:MMEMory:FNUMber] <failure_number><NL>
 Where: <failure_number> ::= integer, 0 to 665

:MMEMory:SOURce

Command :MMEMory:SOURce {CHANnel<n> | FUNCTION{1 | 2 | 3 | 4}}
 Query :MMEMory:SOURce?
 Returned Format [:MMEMory:SOURce] {CHANnel<n> | FUNCTION{1 | 2 | 3 | 4}}<NL>
 Where: <n> ::= integer, 1 or 2 (HP 54520C/54522C), or 1 through 4
 (HP 54540C/54542C)

:MMEMory:STORe

Command :MMEMory:STORe {WMMEMory{1 | 2 | 3 | 4}}

:PCFRequency

Command :PCFRequency <cal_freq>
 Query :PCFRequency
 Returned Format [:PCFRequency] <cal_freq>
 Where: <cal_freq> ::= exponential, probe compensation signal
 frequency in hertz

	:PLOT
Query	:PLOT?
	:PMEMemory{1 2}:CLEAr
Command	:PMEMemory{1 2}:CLEAr
	:PMEMemory{1 2}:DISPlay
Command	:PMEMemory{1 2}:DISPlay {{OFF 0} {ON 1}}
Query	:PMEMemory{1 2}:DISPlay?
Returned Format	[:PMEMemory{1 2}:DISPlay] {0 1}<NL>
	:PMEMemory{1 2}:MERGe
Command	:PMEMemory{1 2}:MERGe
	:PMEMemory{1 2}:SETUp?
Query	:PMEMemory{1 2}:SETUp?
Returned Format	PMEMemory{1 2}:DISP{0 1}<NL>
	:PLOT?
Query	:PLOT?
	:POWERup{RUNning STOPped}
Command	:POWERup{RUNning STOPped}
Query	:POWERup?
Returned Format	[:POWERup] {STOPped RUNning}

:PRINt?

Query

:PRINt?

:RUN

Command

:RUN

:SEQuential:DISPlay

Command

:SEQuential:DISPlay {{OFF | 0} | {ON | 1}}

Query

:SEQuential:DISPlay?

Returned Format

[:SEQuential:DISPlay] {0 | 1} <NL>

:SEQuential:EXCLude

Command

:SEQuential:EXCLude <from_argument>, <to_argument>

Query

:SEQuential:EXCLude?

Returned Format

[:SEQuential:EXCLude] <exclude_list> <NL>

Where:

<from_argument> ::= integer, segment number of the lower end of the exclude range
 <to_argument> ::= integer, segment number of the upper end of the exclude range
 number greater than or equal to the value of <from_argument>
 <exclude_list> ::= integer, a list of previously captured segment numbers separated by commas

:SEQuential:INCLude

Command

:SEQuential:INCLude <from_argument>, <to_argument>

Query

:SEQuential:INCLude?

Returned Format

[:SEQuential:INCLude] <include_list> <NL>

Where:

<from_argument> ::= integer, segment number of the lower end of the include range
 <to_argument> ::= integer, segment number of the upper end of the include range
 <include_list> ::= integer, a list of previously captured segment numbers separated by commas

:SEquential:NPOints

Command	:SEquential:NPOints <points_argument>
Query	:SEquential:NPOints?
Returned Format:	[:SEquential:NPOints] <points_argument><NL>
Where:	<points_argument> ::= integer, 4 to 32768

:SEquential:NSEGments

Command	:SEquential:NSEGments <segments_argument>
Query	:SEquential:NSEGments?
Returned Format	[:SEquential:NSEGments] <segments_argument><NL>
Where:	<segments_argument> ::= integer, 1 to 8888 dependent on the SEquential:NPOints selection

:SEquential:SETup?

Query	:SEquential:SETup?
Returned Format	:SEQ:DISP {0 1}; EXCL <exclude_list>; INCL <include_list>; NPO <points_argument>; NSEG <segment_argument>; SNUM <segments_argument>; (Sequential Single Shot Mode Only) SOURce CHANnel<n><NL> (Sequential Single Shot Mode Only)
Where:	<exclude_list> ::= integer, a list of previously captured segment numbers separated by commas <include_list> ::= integer, a list of previously captured segment numbers separated by commas <points_argument> ::= integer, 4 to 32768 <segments_argument> ::= integer, 1 to 8888 dependent on the points selected <n> ::= integer, 1 or 2 (HP 54520C/54522C), or 1 through 4 (HP 54540C/54542C)

:SEquential:SNUMber

Command	:SEquential:SNUMber <segments_argument>
Query	:SEquential:SNUMber?
Returned Format	[:SEquential:SNUMber] <segments_argument><NL>
Where:	<segments_argument> ::= integer, 1 to 8888 dependent on the number of segments acquired and ACQuire:TYPE currently selected

:SEquential:SOURce

Command	:SEquential:SOURce {CHANnel<n>}
Query	:SEquential:SOURce?
Returned Format	[:SEquential:SOURce] {CHANnel<n>}<NL>
Where:	<n> ::= integer 1 or 2 (HP 54520C/54522C), or 1 through 4 (HP 54540C/54542C)

:SEquential:TTAGs?

Query	:SEquential:TTAGs? <segments_argument>
Where:	<segments_argument> ::= integer, 1 to 8888 dependent on the SEquential:NSEgments selection

:SEquential:TTDifference?

Query	:SEquential:TTDifference?
	<segments_argument>, <segments_argument>
Where:	<segments_argument> ::= integer, 1 to 8888 dependent on the SEquential:NSEgments selection

:SERial

Command	:SERial <serial_number>
Where:	<serial_number> ::= 10 character serial number within quotes

Query Returned Format Where:	:STATus? :STATus? <display> [:STATus] {0 1}<NL> <display> ::= {CHANnel<n> FUNCTION{1 2 3 4} WMEemory{1 2 3 4} PMEemory{1 2}<NL> <n> ::= integer, 1 or 2 (HP 54520C/54522C), or 1 through 4 (HP 54540C/54542C)
Command	:STOP :STOP
Command Where:	:STORe :STORe <source>,<destination> <source> ::= {CHANnel<n> FUNCTION{1 2 3 4} WMEemory{1 2 3 4}} <destination> ::= {WMEemory{1 2 3 4}} <n> ::= integer, 1 or 2 (HP 54520C/54522C), or 1 through 4 (HP 54540C/54542C)
Command Query Returned Format Where:	:SYSTem:DATE :SYSTem:DATE <year>,<month>,<day> :SYSTem:DATE? [:SYSTem:DATE] "DDMMYYYY"<NL> <year>/<YYYY> ::= integer, 1990 through 2059 <month> ::= integer, 1 through 12 <MMM> ::= three digit alphabetic month <day>/<DD> ::= integer, 1 through 31
Command Query Returned Format Where:	:SYSTem:DSP :SYSTem:DSP <ascii_string> :SYSTem:DSP? [:SYSTem:DSP] <ascii_string><NL> <ascii_string> ::= string response data containing the last information written on the advisory line

:SYSTem:ERRor?

Query	:SYSTem:ERRor [{NUMBER STRing}]
Returned Format	[:SYSTem:ERRor] <error> [, <ascii_string>] <NL>
Where:	<error> ::= an integer error code <ascii_string> ::= an alpha string specifying the error condition

:SYSTem:HEADer

Command	:SYSTem:HEADer [{OFF 0} {ON 1}]
Query	:SYSTem:HEADer?
Returned Format	[:SYSTem:HEADer] {0 1} <NL>

:SYSTem:KEY

Command	:SYSTem:KEY <key_code>
Query	:SYSTem:KEY?
Returned Format	[:SYSTem:KEY] <key_code> <NL>
Where:	<key_code> ::= integer, 0 through 63

:SYSTem:LONGform

Command	:SYSTem:LONGform [{OFF 0} {ON 1}]
Query	:SYSTem:LONGform?
Returned Format	[:SYSTem:LONGform] {0 1} <NL>

:SYSTem:PIMacro

Command	:SYSTem:PIMacro <ascii_string>
Where:	<ascii_string> ::= name of the defined macro

:SYSTem:SETup	
Command	:SYSTem:SETup <block_data>
Query	:SYSTem:SETup?
Returned Format	[:SYSTem:SETup] <block_data><NL>
Where:	<block_data> ::= #800002048<setup_string> <setup_string> ::= block of binary data bytes
:SYSTem:TIME	
Command	:SYSTem:TIME <hour>,<minute>,<second>
Query	:SYSTem:TIME?
Returned Format	[:SYSTem:TIME] "HH:MM:SS"<NL>
Where:	<hour>/<HH> ::= integer, 0 through 23 <month>/<MM> ::= integer, 0 through 59 <second>/<SS> ::= integer, 0 through 59
:SYSTem:UTILity	
Command	:SYSTem:UTILity:GMARkers {ON OFF} :SYSTem:UTILity:LABels {ON OFF} :SYSTem:UTILity:FACTOR {ON OFF} :SYSTem:UTILity:FPANel {ON OFF}
Query	:SYSTem:UTILity:FPANel:TIMEout {<timeout> INFINITY} :SYSTem:UTILity:GMARkers? :SYSTem:UTILity:LABels? :SYSTem:UTILity:FACTOR? :SYSTem:UTILity:FPANel? :SYSTem:UTILity:FPANel:TIMEout?
Returned Format	[:SYSTem:UTILity:GMARkers] {ON OFF}<NL>
Where:	<timeout> ::= integer, 0 through 12 (hours)
:TER?	
Query	:TER?
Returned Format	[:TER] {0 1}<NL>

:TIMEbase:DELAy

Command	:TIMEbase:DELAy <delay_value>
Query	:TIMEbase:DELAy?
Returned Format	[:TIMEbase:DELAy] <delay_value><NL>
Where:	<delay_value> ::= exponential, time from trigger to display reference in seconds

:TIMEbase:MODE

Command	:TIMEbase:MODE {AUTO TRIGgered SINGLE}
Query	:TIMEbase:MODE?
Returned Format	[:TIMEbase:MODE] {AUTO TRIGgered SINGLE}<NL>

:TIMEbase:RANGE

Command	:TIMEbase:RANGE <range_value>
Query	:TIMEbase:RANGE?
Returned Format	[:TIMEbase:RANGE] <range_value><NL>
Where:	<range_value> ::= exponential, 10 ns to 50 s in a 1,2,5 sequence

:TIMEbase:REFerence

Command	:TIMEbase:REFerence {LEFT CENTER RIGHT}
Query	:TIMEbase:REFerence?
Returned Format	[:TIMEbase:REFerence] {LEFT CENTER RIGHT}<NL>

:TIMEbase:RLENgth

Command	:TIMEbase:RLENgth <length_argument>
Query	:TIMEbase:RLENgth?
Returned Format	[:TIMEbase:RLENgth] <length_argument><NL>
Where:	<length_argument> ::= integer, 500 in the repetitive mode, 512, 1024, 2048, 4196, 8192, 16384, or 32768 in the real-time mode (sequential off), or 4 to 32768 in the real-time mode (sequential on), depending on the current :SEquential:NSEGments value

:TIMebase:SAMPle

Command	:TIMebase:SAMPle {REALtime REPetitive}
Query	:TIMebase:SAMPle?
Returned Format	[:TIMebase:SAMPle] {REALtime REPetitive}<NL>

:TIMebase:SAMPle:CLOCK

Command	:TIMebase:SAMPle:CLOCK {AUTO <clock_value>}
Query	:TIMebase:SAMPle:CLOCK?
Returned Format	[:TIMebase:SAMPle:CLOCK] <clock_value><NL>
Where:	<clock_value> ::= exponential, 10S/s to 2GS/s

:TIMebase:SETup?

Query	:TIMebase:SETup?
Returned Format	:TIM:DEL <delay_value>; MODE {AUTO TRIG SING}; RANGe <range_value>; RLEN <length_argument>; REF {LEFT CENT RIGH}; SAMPle {REAL REP}; SAMP:CLOC {AUTO <clock_value>}<NL>
Where:	<delay_value> ::= exponential, time from trigger to display reference in seconds <range_value> ::= exponential, 5ns to 50s <length_argument> ::= 500 in the repetitive mode, 512, 1024, 2048, 4196, 8192, 16384, or 32768 in the real-time mode (sequential off), or 4 to 32768 in the real-time mode (sequential on), depending on the current :SEQuential:NSEGments value <clock_value> ::= exponential, 10S/s to 2GS/s

:TRIGger:CENTERed

Command	:TRIGger:CENTERed
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:TRIGger:CONDition

Command	:TRIGger:CONDition {ENTER EXIT TRUE FALSE GT,<gt_argument> LT,<lt_argument> RANGE,<range_gt>,<range_lt>}
Query	:TRIGger:CONDition?
Returned Format	[:TRIGger:CONDition] <argument><NL>
Where:	<argument> ::= {ENTER EXIT GT,<gt_argument> LT,<lt_argument> RANGE,<range_gt>,<range_lt> } in PATTERN or DELay with QUALify:PATtern selected; {TRUE FALSE} (in STATE or DELay with QUALify:STATE selected; or RANGE, <range_gt>,<range_lt> in TV mode <gt_argument> ::= exponential, 20 ns to 160 ms <lt_argument> ::= exponential, 20 ns to 160 ms <range_gt> ::= exponential, 20 ns to 159.999 ms (must be less than <range_lt>) <range_lt> ::= exponential, 30 ns to 160 ms (must be greater than <range_gt>)

:TRIGger:COUpling

Command	:TRIGger:COUpling {AC DC LFReject}
Query	:TRIGger:COUpling?
Returned Format	[:TRIGger:COUpling] {AC DC LFReject}<NL>

:TRIGger:DElay

Command	:TRIGger:DElay {TIME,<time_argument> EVENT,<event_argument>}
Query	:TRIGger:DElay?
Returned Format	[:TRIGger:DElay] {TIME,<time_argument> EVENT,<event_argument>}<NL>
Where:	<time_argument> ::= exponential, amount of delay from 30 ns to 160 ms <event_argument> ::= integer, number of events from 1 to 16000000

:TRIGger:DElay:SLOPe

Command	:TRIGger:DElay:SLOPe {POSitive NEGative}
Query	:TRIGger:DElay:SLOPe?
Returned Format	[[:TRIGger:DElay:SLOPe] {POSitive NEGative}<NL>

:TRIGger:DElay:SOURce

Command	:TRIGger:DElay:SOURce {CHANnel<n> EXTernal}
Query	:TRIGger:DElay:SOURce?
Returned Format	[[:TRIGger:DElay:SOURce] {CHANnel<n> EXTernal}
Where:	<n> ::= integer, 1 or 2 (HP 54520C/54522C), or 1 through 4 (HP 54540C/54542C)

NOTE: EXTernal available only on HP 54520C/54522C

:TRIGger:FIELd

Command	:TRIGger:FIELd {1 2}
Query	:TRIGger:FIELd?
Returned Format	[[:TRIGger:FIELd] {1 2}<NL>

:TRIGger:GLITch:CENTERed

Command	:TRIGger:GLITch:CENTERed
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:TRIGger:GLITch:HOLDoff

Command	:TRIGger:GLITch:HOLDoff <holdoff_time>
Query	:TRIGger:GLITch:HOLDoff?
Returned Format	[[:TRIGger:GLITch:HOLDoff] <holdoff_time><NL>
Where:	<holdoff_time> ::= exponential, 40 ns to 320 ms rounded to nearest 20 ns increment

:TRIGger:GLITch:LEVel

Command	:TRIGger:GLITch:LEVel <level_argument>
Query	:TRIGger:GLITch:LEVel?
Returned Format	[:TRIGger:GLITch:LEVel] <level_argument><NL>
Where:	<p><level_argument> ::= exponential, for internal triggers, ± 1.5 x</p> <p>full-scale voltage from center screen, for external triggers</p> <p>(HP 54520C/54522C) ± 2 volts with probe attenuation at 1:1</p>

:TRIGger:GLITch:SOURce

Command	:TRIGger:GLITch:SOURce {CHANnel<n> EXTErnal},{HIGH LOW}
Query	:TRIGger:GLITch:SOURce?
Returned Format	[:TRIGger:GLITch:SOURce] {CHANnel<n> EXTErnal},{HIGH LOW}
Where:	<p><n> ::= integer 1 or 2 (HP 54520C/54522C), or 1 through 4</p> <p>(HP 54540C/54542C)</p> <p>NOTE: EXTErnal available only on HP 54520C/54522C</p>

:TRIGger:GLITch:WIDth

Command	:TRIGger:GLITch:WIDth {GT LT},<width_argument>
Query	:TRIGger:GLITch:WIDth?
Returned Format	[:TRIGger:GLITch:WIDth] {GT LT},<width_argument><NL>
Where:	<width_argument> ::= exponential, 5 ns to 160 ms

:TRIGger:HOLDoff

Command	:TRIGger:HOLDoff [{TIME,<holdoff_time>} {EVENT,<event_argument>}]
Query	:TRIGger:HOLDoff?
Returned Format	[:TRIGger:HOLDoff] {TIME,<holdoff_value> EVENT,<event_argument>}<NL>
Where:	<p><holdoff_time> ::= exponential, 40 ns to 320 ms</p> <p><event_argument> ::= integer, 1 to 16000000</p>

:TRIGger:LEVel

Command	:TRIGger:LEVel <level_argument>
Query	:TRIGger:LEVel?
Returned Format	[[:TRIGger:LEVel] <level_argument><NL>
Where:	<level_argument> ::= for internal triggers, $\pm 1.5 \times$ full-scale voltage from center screen; for external triggers, ± 2 volts with probe attenuation at 1:1

:TRIGger:LINE

Command	:TRIGger:LINE <line_number>
Query	:TRIGger:LINE?
Returned Format	[[:TRIGger:LINE] <line_number><NL>
Where:	<line_number> ::= integer, 1 to 625 (depends on STANDARD and FIELD selection)

:TRIGger:LOGic

Command	:TRIGger:LOGic {HIGH LOW DONTcare}
Query	:TRIGger:LOGic?
Returned Format	[[:TRIGger:LOGic] {HIGH LOW DONTcare}<NL>

:TRIGger:MODE

Command	:TRIGger:MODE {EDGE PATtern STATE DELay TV GLITch}
Query	:TRIGger:MODE?
Returned Format	[[:TRIGger:MODE] {EDGE PATtern STATE DELay TV GLITch}<NL>

:TRIGger:NREJect

Command	:TRIGger:NREJect {{OFF 0} {ON 1}}
Query	:TRIGger:NREJect?
Returned Format	[[:TRIGger:NREJect] {0 1}<NL>

:TRIGger:OCCurrence

Command	:TRIGger:OCCurrence <occurrence_argument>
Query	:TRIGger:OCCurrence?
Returned Format	[[:TRIGger:OCCurrence] <occurrence_argument><NL>
Where:	<occurrence_argument> ::= integer, 1 to 16000000

:TRIGger:OCCurrence:SLOPe

Command	:TRIGger:OCCurrence:SLOPe {POSitive NEGative}
Query	:TRIGger:OCCurrence:SLOPe?
Returned Format	[[:TRIGger:OCCurrence:SLOPe] {POSitive NEGative}<NL>

:TRIGger:OCCurrence:SOURce

Command	:TRIGger:OCCurrence:SOURce {CHANnel<n> EXTernal}
Query	:TRIGger:OCCurrence:SOURce?
Returned Format	[[:TRIGger:OCCurrence:SOURce] {CHANnel<n> EXTernal}<NL>
Where:	<n> ::= integer, 1 or 2 (HP 54520C/54522C), or 1 through 4 (HP 54540C/54542C)

NOTE: EXTernal available only on HP 54520C/54522C

:TRIGger:PATH

Command	:TRIGger:PATH {CHANnel<n> EXTernal}
Query	:TRIGger:PATH?
Returned Format	[[:TRIGger:PATH] {CHANnel<n> EXTernal}<NL>
Where:	<n> ::= integer, 1 or 2 (HP 54520C/54522C), or 1 through 4 (HP 54540C/54542C)

NOTE: EXTernal available only on HP 54520C/54522C

:TRIGger:POLarity

Command	:TRIGger:POLarity {POSitive NEGative}
Query	:TRIGger:POLarity?
Returned Format	[[:TRIGger:POLarity] {POSitive NEGative}<NL>

:TRIGger:QUALify

Command Query Returned Format	:TRIGger:QUALify {{EDGE PATtern STATE} {LOW HIGH}} :TRIGger:QUALify? [:TRIGger:QUALify] {{EDGE PATtern STATE} {LOW HIGH}}<NL>
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:TRIGger:SETup?

Query Returned Format	:TRIGger:SETup? :TRIG:MODE EDGE; COUP {AC DC LFR}; HOLD {{TIME,<holdoff_time>} EVENT, <event_argument>}}; LEV <level_argument>; NREJ {0 1}; SLOP {POS NEG}; SOUR {CHAN<n> EXT LINE AUX}<NL> (EXT is only valid for the 54520/22) :TRIG:MODE PATT; COND {ENT EXIT GT,<gt_argument> LT,<lt_argument> RANG,<range_gt>,<range_lt>}}; HOLD {{TIME,<holdoff_time>} EVEN, <event_argument>}}; LEV <level_argument>; LOG {HIGH LOW DONT}; NREJ {0 1}; PATH {CHAN<n> EXT}<NL> (EXT is only valid for the 54520/22) :TRIG:MODE STAT; COND {TRUE FALS}; HOLD {{TIME,<holdoff_time>} {EVEN, <event_argument>}}; LEV <level_argument>; LOG {HIGH LOW DONT}; NREJ {0 1}; PATH {CHAN<n> EXT}; (EXT is only valid for the 54520/22) SLOP {POS NEG}; SOUR {CHAN<n> EXT}<NL> (EXT is only valid for the 54520/22)
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:TRIG:MODE DEL;
COND {ENT | EXIT | TRUE | FALS | GT,<gt_argument> |
    LT,<lt_argument> | RANG,<range_gt>,<range_lt>};
DEL {{TIME,<time_value>} | {EVEN, <event_value>}};
DEL:SLOP {POS | NEG};
DEL:SOUR {CHAN<n> | EXT};    (EXT is only valid for the 54520/22)
LEV <level_argument>;
LOG {HIGH | LOW | DONT};
NREJ {0 | 1};
OCC <occurrence_argument>;
OCC:SLOP {POS | NEG};
OCC:SOUR {CHAN<n> | EXT};    (EXT is only valid for the 54520/22)
PATH {CHAN<n> | EXT};    (EXT is only valid for the 54520/22)
QUAL {EDGE | PATT | STAT};
SLOP {POS | NEG};
SOUR {CHAN<n> | EXT}<NL>    (EXT is only valid for the
                           54520/22)

:TRIG:MODE TV;
COND {RANG,<range_gt>,<range_lt>};
FIEL {1 | 2};
HOLD {{TIME,<holdoff_time>} | {EVEN, <event_argument>}};
LEV <level_argument>;
LINE <line_number>;
NREJ {0 | 1};
OCC <occurrence_argument>;
OCC:SLOP {POS | NEG};
POL {POS | NEG};
QUAL {LOW | HIGH};
SOUR {CHAN<n> | EXT};    (EXT is only valid for the 54520/22)
STAN {525 | 625 | USER}<NL>

:TRIG:MODE GLIT;
GLITCh:HOLD TIME,<holdoff_time>;
GLITCh:LEV <level_argument>;
GLITCh:NREJ {0 | 1};
GLITCh:SOUR {CHAN<n> | EXT}, {LOW | HIGH};    (EXT is only valid
                                                for the 54520/22)
GLITCh:WIDTH {GT | LT}, <width_argument><NL>
```


Where:

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<n> ::= integer, 1 or 2 (HP 54520C/54522C), or 1 through 4
      (HP 54540C/54542C)
<gt_argument> ::= exponential, 20 ns to 160 ms
<lt_argument> ::= exponential, 20 ns to 160 ms
<range_gt> ::= exponential, 20 ns to 159.999 ms (must be less
      than <range_lt>)
<range_lt> ::= exponential, 30 ns to 160 ms (must be greater
      than <range_gt>)
<time_value> ::= exponential, amount of delay from 30ns to
      160ms
<event_value> ::= integer, number of events from 1 to 16000000
<holdoff_time> ::= exponential, 40 ns to 320 ms rounded to
      nearest 20 ns increment
<level_argument> ::= exponential, trigger level in volts
<width_argument> ::= exponential, 5 ns to 160 ms
<event_argument> ::= integer, 1 to 16000000
<line_number> ::= integer, 1 to 625 (depends on STANDARD and
      FIELD selection)
    
```

:VIEW

Command

Where:

```
:VIEW <display>
<display> ::= CHANNEL<n>|FUNCTION{1 | 2 | 3 | 4} |
           PMEMory{1 | 2} | WMEMory{1 | 2 | 3 | 4}}
<n> ::= integer, 1 or 2 (HP 54520C/54522C), or 1 through 4
      (HP 54540C/54542C)
<n> ::= integer 1 or 2 (HP 54520C/54522C)
```

:WAVEform:DATA

Command

Query

Returned Format

Where:

```
:WAVEform:DATA <block_data>
:WAVEform:DATA?
[:WAVEform:DATA] <block_data><NL>
<block_data> ::= definite block data in IEEE 488.2 # format
```

:WAVEform:FORMat

Command

Query

Returned Format

```
:WAVEform:FORMat {AScii | WORD | BYTE | COMPRESSED}
:WAVEform:FORMat?
[:WAVEform:FORMat] {AScii | WORD | BYTE | COMPRESSED}<NL>
```

:WAVEform:POINTs

Query

Returned Format

```
:WAVEform:POINTs?
[:WAVEform:POINTs] {512 | 1024 | 2048 | 4096 | 8192 | 16384 |
32768}<NL>
```

:WAVeform:PREamble

Command
Query
Returned Format
Where:

```
:WAVeform:PREamble <preamble_data>
:WAVeform:PREamble?
[:WAVeform:PREamble] <preamble block><NL>
<preamble_data> ::= <format NR1>, <type NR1>, <points NR1>,
    <count NR1>, <xincrement NR3>, <xorigin NR3>, <xreference NR1>,
    <yincrement NR3>, <yorigin NR3>, <yreference NR1>
<format> ::= 0 for ASCII format
    1 for BYTE format
    2 for WORD format
    4 for COMPRESSED format
<type> ::= 0 for INVALID type
    1 for NORMAL type or REALTIME
    2 for AVERAGE type
    3 for ENVELOPE type
    4 for RAWDATA type
    5 for PDETECT type
```

:WAVeform:SOURce

Command
Query
Returned Format
Where:

```
:WAVeform:SOURce {CHANnel<n> | WMemory{1 | 2 | 3 | 4}}
:WAVeform:SOURce?
[:WAVeform:SOURce] {CHANnel<n> | WMemory{1 | 2 | 3 | 4}}<NL>
<n> ::= integer 1 or 2 (HP 54520C/54522C), or 1 through 4
    (HP 54540C/54542C)
```

:WAVeform:TYPE?

Query
Returned Format

```
:WAVeform:TYPE?
[:WAVeform:TYPE] {INValid | AVERage | ENVELOpe | NORMAl |
    PDETECT | RAWData}<NL>
```

:WAVeform:XINCrement?

Query
Returned Format
Where:

```
:WAVeform:XINCrement?
[:WAVeform:XINCrement] <value><NL>
<value> ::= exponential, x-increment in the current preamble
```

:WAVeform:XORigin?

Query :WAVeform:XORigin?
Returned Format [:WAVeform:XORigin] <value>[,<value>]...<NL>
Where: <value> ::= exponential, x-origin value in the current preamble

:WAVeform:XREference?

Query :WAVeform:XREference?
Returned Format [:WAVeform:XREference] <value><NL>
Where: <value> ::= integer, x-reference value in the current preamble

:WAVeform:YINCrement?

Query Syntax: :WAVeform:YINCrement?
Returned Format [:WAVeform:YINCrement] <value><NL>
Where: <value> ::= exponential, y-increment value in the current preamble

:WAVeform:YORigin?

Query :WAVeform:YORigin?
Returned Format [:WAVeform:YORigin] <value><NL>
Where: <value> ::= exponential, y-origin in the current preamble

:WAVeform:YREference?

Query :WAVeform:YREference?
Returned Format [:WAVeform:YREference] <value><NL>
Where: <value> ::= integer, y-reference value in the current preamble

:WMEMemory{1 | 2 | 3 | 4}:DISPlay

Command :WMEMemory{1 | 2 | 3 | 4}:DISPlay {{OFF | 0} | {ON | 1}}
Query :WMEMemory{1 | 2 | 3 | 4}:DISPlay?
Returned Format [:WMEMemory{1 | 2 | 3 | 4}:DISPlay] {0 | 1}<NL>

:WMEemory{1 | 2 | 3 | 4}:GET

Command :WMEemory{1 | 2 | 3 | 4}:GET {CHANnel<n> | WMEemory{1 | 2 | 3 | 4} | FUNCTION{1 | 2 | 3 | 4}}

Where: <n> ::= integer 1 or 2 (HP 54520C/54522C), or 1 through 4 (HP 54540C/54542C)

:WMEemory{1 | 2 | 3 | 4}:PROTECT

Command :WMEemory{1 | 2 | 3 | 4}:PROTECT {(OFF | 0) | {ON | 1}}

Query :WMEemory{1 | 2 | 3 | 4}:PROTECT?

Returned Format [:WMEemory{1 | 2 | 3 | 4}:PROTECT] {0 | 1}<NL>

:WMEemory{1 | 2 | 3 | 4}:SETup?

Query :WMEemory{1 | 2 | 3 | 4}:SETup?

Returned Format :WMEEM{1 | 2 | 3 | 4}:DISP {0 | 1};
 PROT {0 | 1};
 XOFF <offset_argument>;
 XRANG <range_argument>;
 YOFF <yoffset>;
 YRANG <yrange><NL>

Where: <range_argument> ::= exponential, 5 ns to 50 sec
 <offset_argument> ::= exponential, time from trigger to display reference in seconds
 <yoffset> ::= exponential, offset value in volts
 <yrange> ::= exponential, full-scale range value

:WMEemory{1 | 2 | 3 | 4}:XOFFset

Command :WMEemory{1 | 2 | 3 | 4}:XOFFset <xoffset_argument>

Query :WMEemory{1 | 2 | 3 | 4}:XOFFset?

Returned Format [:WMEemory{1 | 2 | 3 | 4}:XOFFset] <xoffset_argument><NL>

Where: <xoffset_argument> ::= exponential, time from trigger to the on screen delay reference point. The maximum value depends on the :WMEemory:XRANGe setting

:WMEemory{1 | 2 | 3 | 4}:XRANge

Command	:WMEemory{1 2 3 4}:XRANge <range_argument>
Query	:WMEemory{1 2 3 4}:XRANge?
Returned Format	[:WMEemory{1 2 3 4}:XRANge] <range_argument><NL>
Where:	<range_argument> ::= exponential, 5 ns to 50 s in a 1,2,5 sequence

:WMEemory{1 | 2 | 3 | 4}:YOFFset?

Query	:WMEemory{1 2 3 4}:YOFFset?
Returned Format	[:WMEemory{1 2 3 4}:YOFFset] <yoffset><NL>
Where:	<yoffset> ::= exponential, offset value in volts

:WMEemory{1 | 2 | 3 | 4}:YRANge?

Query	:WMEemory{1 2 3 4}:YRANge?
Returned Format	[:WMEemory{1 2 3 4}:YRANge] <yrange><NL>
Where:	<yrange> ::= exponential, full-scale range value

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Warning

- Before turning on the instrument, you must connect the protective earth terminal of the instrument to the protective conductor of the (mains) power cord. The mains plug shall only be inserted in a socket outlet provided with a protective earth contact. You must not negate the protective action by using an extension cord (power cable) without a protective conductor (grounding). Grounding one conductor of a two-conductor outlet is not sufficient protection.
- Only fuses with the required rated current, voltage, and specified type (normal blow, time delay, etc.) should be used. Do not use repaired fuses or short-circuited fuseholders. To do so could cause a shock or fire hazard.

- Service instructions are for trained service personnel. To avoid dangerous electric shock, do not perform any service unless qualified to do so. Do not attempt internal service or adjustment unless another person, capable of rendering first aid and resuscitation, is present.

- If you energize this instrument by an auto transformer (for voltage reduction), make sure the common terminal is connected to the earth terminal of the power source.

- Whenever it is likely that the ground protection is impaired, you must make the instrument inoperative and secure it against any unintended operation.

- Do not operate the instrument in the presence of flammable gasses or fumes. Operation of any electrical instrument in such an environment constitutes a definite safety hazard.

- Do not install substitute parts or perform any unauthorized modification to the instrument.

- Capacitors inside the instrument may retain a charge even if the instrument is disconnected from its source of supply.

- Use caution when exposing or handling the flat panel display. Handling or replacing the display shall be done only by qualified maintenance personnel.

Safety Symbols



Instruction manual symbol: the product is marked with this symbol when it is necessary for you to refer to the instruction manual in order to protect against damage to the product.



Hazardous voltage symbol.



Earth terminal symbol: Used to indicate a circuit common connected to grounded chassis.

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The Warning sign denotes a hazard. It calls attention to a procedure, practice, or the like, which, if not correctly performed or adhered to, could result in personal injury. Do not proceed beyond a Warning sign until the indicated conditions are fully understood and met.

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